

REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicants have filled in the blanks on pages 5, 7, and 8, including serial numbers and filing dates.

Disposition of Claims

Prior to this response, the application included claims 1-31. Examiner has rejected claims 1-19, 21, and 23-31, and objected to claims 20 and 22. Accordingly, claims 1-31 are presented for examination, with claims 1, 25, 28, and 31 being in independent form.

Objections

The examiner has objected to the claims 22, 27, and 31 because of informalities. Claim 22 has been amended to make the claim more readable, but does not change the scope of the claim. The claim now recites "a plurality of projections proximate each of the nozzle openings." Claims 27 and 31 have been amended to correct antecedent basis, but do not change the scope of the claims. Claim 27 now recites "wherein the posts have a width that is about twice the nozzle opening or less." Claim 31 now recites "a flow path in which fluid is pressurized to eject drops from a nozzle opening in a plane."

Claims 1, 25, and 28 have been amended to correct the antecedent basis, but do not change the scope of the claims. Claims 1 now recites "a flow path in which fluid is pressurized to eject drops from a nozzle opening in a plane." Claim 25 now recites "a flow path in which fluid is pressurized for ejection through a nozzle opening in a plane." Claim 28 now recites "providing a printhead including a flow path in which fluid is pressurized for ejection through a nozzle opening in a plane."

Rejections under 35 U.S.C. §112

The examiner has rejected claim 10 under 35 U.S.C. §112, 2nd paragraph as being indefinite. Claim 10 has been amended to recite "the nozzle opening having a perimeter and a nozzle opening width, wherein the projections are no closer to the perimeter of the nozzle

opening than about 20% of the nozzle opening width.” Accordingly, applicants submit that claim 10 particularly points out and distinctly claims the invention and respectfully request that the rejection be withdrawn.

Applicants note that the amendment to claim 10 merely clarifies and makes explicit what was already recited in the claim.

Rejections under 35 U.S.C. §§102, 103

The Examiner rejected claims 1-6, 8, 12-16, 18, 21, 24, and 25 under 35 U.S.C. 102(b) as being anticipated by Merkel et al (U.S. 5,604,521), claim 28 under 35 U.S.C. 102(b) as being anticipated by Cloutier et al (EP 0 110 534), claims 7, 9, 11, 17, 19, 23, 26, 27, 29, 30, and 31 under 103(a).

Independent Claim 1

The Examiner rejected claim 1 as anticipated by Merkel et al. Applicants respectfully traverse. The drop ejector in amended independent claim 1 recites “a flow path in which fluid is pressurized to eject drops from a nozzle opening in a plane ... a plurality of projections extending from the plane of the nozzle opening.” Applicants submit that Merkel does not describe a drop ejector, comprising: a flow path in which fluid is pressurized to eject drops from a nozzle opening in a plane, ..., a plurality of projections extending from the plane of the nozzle opening, as recited in amended independent claim 1. Rather, Merkel describes an orifice plate projection 28 extending outwardly from the rear side surface 26 of the orifice plate. (See col. 4, lines 64-67; Fig. 1) The projection 28 does not extend from the plane that fluid drops are ejected.

Accordingly, applicants submit that claim 1 is not anticipated and respectfully request that the rejection under 35 U.S.C. 102 be withdrawn. Furthermore, because claims 2-6, 8, 12-16, 18, 20-22, and 24 depend from claim 1, these dependent claims are not anticipated for at least the same reason that independent claim 1 is not anticipated.

The Examiner also rejected dependent claims 7, 9, 11, 17, and 23 as being unpatentable over Merkel et al. The Examiner acknowledges that Merkel fails to disclose the pattern defines an arc, projections that have a width that is about twice the nozzle opening width or less, the spacing between projections is about twice the nozzle width or less, the body is a silicon material, and the nozzle opening width is about 200 microns or less. The Examiner argues that it would be an obvious design choice to shape the projections in an arc. Also, the Examiner argues that it would be obvious to select an optimum design range, such as projections that have a width that is about twice the nozzle opening width or less, the spacing between projections is about twice the nozzle width or less, and the nozzle opening width is about 200 microns or less. Finally, the Examiner contends that it would be obvious to select the body made of a silicon material. Applicants do not agree that it would be obvious to a person of skill in the art to choose or select the features recited in these dependent claims. Nonetheless, because these claims depend from independent claim 1, they are patentable for at least the same reason that claim 1 is patentable. In particular, Merkel et al does not describe or suggest a flow path in which fluid is pressurized to eject drops from a nozzle opening in a plane ... a plurality of projections extending from the plane of the nozzle opening.

The Examiner also rejected dependent claim 19 as being unpatentable over Merkel et al in view of the Otsuka et al (U.S. 5,912,689). The Examiner acknowledges that Merkel fails to disclose the body is a silicon material. Applicants submit however Otsuka fails to disclose the feature found to be lacking in Merkel. In particular, Otsuka does not describe or suggest a flow path in which fluid is pressurized to eject drops from a nozzle opening in a plane ... a plurality of projections extending from the plane of the nozzle opening.

Accordingly, applicants submit that claims 7, 9, 11, 17, 19 and 23 are not obvious and respectfully request that the rejection under 35 U.S.C. 103 be withdrawn.

Independent Claim 25

The Examiner rejected claim 25 as anticipated by Merkel et al. Applicants respectfully traverse. The drop ejector in amended independent claim 25 recites "a flow path in

which fluid is pressurized for ejection through a nozzle opening in a plane ... posts extending from the plane of said nozzle opening.” Applicants submit that Merkel does not describe a flow path in which fluid is pressurized for ejection through a nozzle opening in a plane ... posts extending from the plane of said nozzle opening, as recited in amended independent claim 25. Rather, Merkel describes an orifice plate projection 28 extending outwardly from the rear side surface 26 of the orifice plate. (See col. 4, lines 64-67; Fig. 1) The projection 28 does not extend from the plane that fluid drops are ejected.

Accordingly, applicants submit that claim 25 is not anticipated and respectfully request that the rejection under 35 U.S.C. 102 be withdrawn.

The Examiner also rejected dependent claims 26 and 27 as being unpatentable over Merkel et al. The Examiner acknowledges that Merkel fails to disclose that the spacing between said posts is about 10% of the nozzle opening width or greater and twice the nozzle opening width or less, and posts having a width that is about twice the nozzle opening or less. The Examiner contends that it would be obvious to select an optimum design range. Applicants respectfully traverse. Nonetheless, because these claims depend from independent claim 25, they are patentable for at least the same reason that claim 25 is patentable. In particular, Merkel et al does not describe or suggest a flow path in which fluid is pressurized to eject drops from a nozzle opening in a plane ... a plurality of projections extending from the plane of the nozzle opening.

Accordingly, applicants submit that claims 26 and 27 are not obvious and respectfully request that the rejection under 35 U.S.C. 103 be withdrawn.

Independent Claim 28

The Examiner rejected claim 28 as anticipated by Cloutier et al. Applicants respectfully traverse. Amended independent claim 28 recites “a flow path in which fluid is pressurized for ejection through a nozzle opening in a plane ... a plurality of projections extending from the plane of the nozzle opening.” Applicants submit that Cloutier does not describe a flow path in which fluid is pressurized for ejection through a nozzle opening in a

plane ... a plurality of projections extending from the plane of the nozzle opening, as recited in amended independent claim 28. Rather, Cloutier shows spacers 31 on the backside of orifice plate 27. (See Figs. 3 and 6) Cloutier does not show projections extending from the plane that fluid drops are ejected.

Accordingly, applicants submit that claim 28 is not anticipated and respectfully request that the rejection under 35 U.S.C. 102 be withdrawn.

The Examiner also rejected dependent claims 29 and 30 as being unpatentable over Cloutier et al. The Examiner acknowledges that Cloutier fails to disclose the fluid has a surface tension of about 20-50 dynes/cm, and the fluid has a viscosity of about 1 to 40 centipoise. The Examiner argues that it would be obvious to select a type of fluid as recited in claims 29 and 30. Applicants respectfully traverse. However, Cloutier does not describe or suggest a flow path in which fluid is pressurized for ejection through a nozzle opening in a plane ... a plurality of projections extending from the plane of the nozzle opening.

Accordingly, applicants submit that claims 29 and 30 are not obvious and respectfully request that the rejection under 35 U.S.C. 103 be withdrawn.

Independent Claim 31

The Examiner rejected claim 31 as being unpatentable over Merkel et al in view of Miyata (U.S. 5,992,974). Applicants respectfully traverse. The drop ejector in amended independent claim 31 recites "a flow path in which fluid is pressurized to eject drops from a nozzle opening in a plane ... a plurality of projections extending from the plane of the nozzle opening." Applicants submit that Merkel does not describe a flow path in which fluid is pressurized to eject drops from a nozzle opening in a plane ... a plurality of projections extending from the plane of the nozzle opening, as recited in amended independent claim 31. Rather, Merkel describes an orifice plate projection 28 extending outwardly from the rear side surface 26 of the orifice plate. (See col. 4, lines 64-67; Fig. 1) The projection 28 does not extend from the plane that fluid drops are ejected.

The examiner acknowledges that Merkel fails to disclose a common body fabricated from a silicon material. Applicants submit that Miyata also fails to disclose a flow path in which fluid is pressurized to eject drops from a nozzle opening in a plane ... a plurality of projections extending from the plane of the nozzle opening. Accordingly, applicants submit that claim 31 is not obvious and respectfully request that the rejection under 35 U.S.C. 103 be withdrawn.

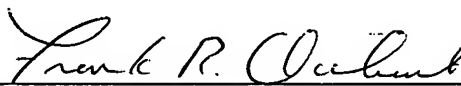
Conclusion

Applicants believe that the claims have been shown to be allowable over the prior art. Applicants believe that this reply is responsive to each ground of rejection cited by the examiner in the Action dated November 10, 2005, and respectfully request a Notice of Allowance.

It is not believed that any fees are due, but please apply charges or credits to deposit account 06-1050, referencing Attorney Docket No. 09991-150001.

Respectfully submitted,

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